

Course Title	Course Code	Credit Hours
Strength of Materials	AE-232	3-1

Textbooks:

- Ferdinand Pierre Beer, Elwood Russell Johnston, John T. DeWolf," Mechanics of Materials", McGraw- Hill Higher Education
- R.C. Hibbeler, "Mechanics of materials", Pearson

Reference Books/Materials:

- Archie Higdon, "Mechanics of Materials", Wiley
- Arthur P. Boresi and Richard J. Schmidt , "Advanced Mechanics of Materials", Wiley
- EASA Part-66 Category B1 Maintenance License Module 6, "Materials and Hardware"

Course Objectives:

This course aims to introduce students to techniques for Designing Machine components and mechanisms, predicting failures, and understanding material properties. It focuses on applying these methods to engineering problems.

Course Outline:

- Introduction to load; Concept of Normal and Shearing Stress; Normal and Shearing Strain
- Poisson's Ration, Hooke's Law
- Stress and Deformation in Axially Loaded Member
- Stress on Oblique Plane
- Statically Determinate and Indeterminate; Temperature Effect
- Stress and Torsional Deformation of a Circular Cross Section Shaft
- Flexure Formula, Shear force and Bending Moment in Beam
- Methods of Integration and Superposition for Finding Deflection of Beam
- Transverse Shear Stress Formula
- Thin-Walled Pressure Vessel, Combined Loading of Beam

- Plane Stress Transformation; Principal Stresses
- Max Shear Stress; Mohr's Circle for Plane Stress; Strain Transformation
- Euler Formula of Buckling
- Critical Load; Critical Load Under Various End Conditions
- Introduction to Fatigue, and Creep